Maklumat berikut mungkin berguna. Simbol-simbol mempunyai makna yang biasa.
The following information may be useful. The symbols have their usual meaning.

DAYA DAN GERAKAN I
FORCE AND MOTION 1

1. $v = u + at$
2. $s = \frac{1}{2}(u + v)\,t$
3. $s = ut + \frac{1}{2}a\,t^2$
4. $v^2 = u^2 + 2as$
5. Momentum = mv
6. $F = ma$

KEGRAVITIAN
GRAVITATION

1. $F = \frac{Gm_1m_2}{r^2}$
2. $g = \frac{Gm}{r^2}$
3. $F = \frac{mv^2}{r}$
4. $a = \frac{v^2}{r}$
5. $v = \frac{2\pi r}{T}$
6. $\frac{T_1^2}{r_1^3} = \frac{T_2^2}{r_2^3}$
7. $v = \sqrt{\frac{GM}{r}}$
8. $u = -\frac{GMm}{r}$
9. $v = \sqrt{\frac{2GM}{r}}$

HABA
HEAT

1. $Q = mc\Theta$
2. $Q = ml$
3. $Q = Pt$
4. $P_1V_1 = P_2V_2$
5. $\frac{V_1}{T_1} = \frac{V_2}{T_2}$
6. $\frac{P_1}{T_1} = \frac{P_2}{T_2}$

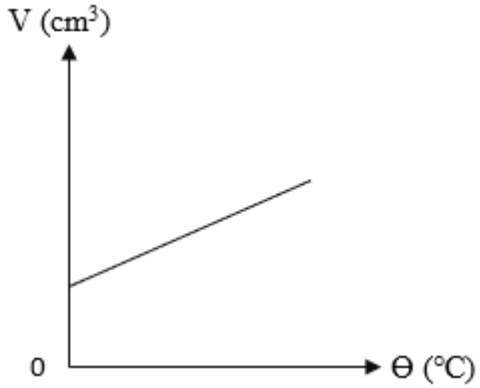
GELOMBANG
WAVES

1. $v = f\lambda$
2. $\lambda = \frac{ax}{D}$

CAHAYA DAN OPTIK
LIGHT AND OPTICS

1. $n = \frac{c}{v}$
2. $n = \frac{\sin i}{\sin r}$
3. $n = \frac{1}{\sin c}$
4. $n = \frac{H}{h}$
5. $\frac{1}{f} = \frac{1}{u} + \frac{1}{v}$
6. $n_1 \sin\Theta_1 = n_2 \sin\Theta_2$
7. Pembesaran linear, $m = \frac{v}{u}$
   Linear magnification

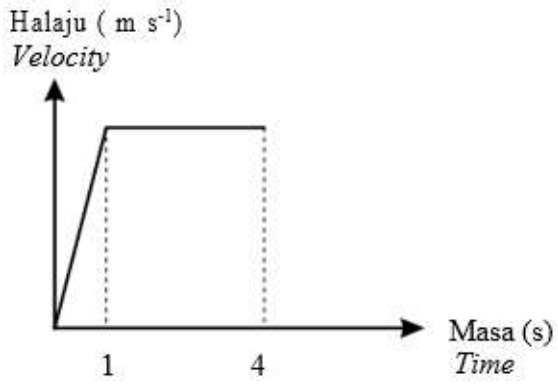
4 Rajah 1 menunjukkan satu graf isipadu, V melawan suhu, Θ bagi suatu gas.
Diagram 1 *shows a graph volume, V against temperature, Θ for a gas.*



Rajah 1
Diagram 1

	Pembolehubah bergerak balas ***Responding variable***	**Hubungan** ***Relationship***
A	Θ	V berkadar terus dengan Θ *V is directly proportional with Θ*
B	Θ	V bertambah secara linear dengan Θ *V is increasing linearly with Θ*
C	V	V berkadar terus dengan Θ *V is directly proportional with Θ*
D	V	V bertambah secara linear dengan Θ *V is increasing linearly with Θ*

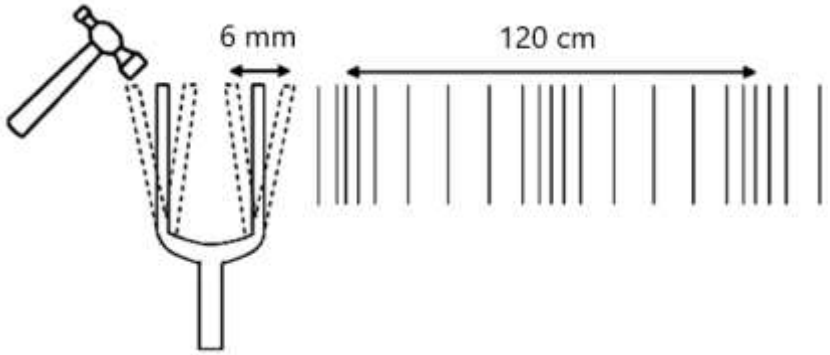
5 Rajah 2 menunjukkan graf halaju-masa bagi suatu objek.
Diagram 2 *shows a velocity-time graph for an object.*



Rajah 2
Diagram 2

Antara berikut yang manakah graf pecutan-masa untuk mewakili pergerakan objek tersebut?
Which of the following acceleration-time graph represent the motion of the object?

13 Rajah 5 menunjukkan sebuah tala bunyi diketuk untuk menghasilkan gelombang bunyi.
Diagram 5 *shows a tuning fork tapped to produce sound waves.*



Rajah 5
Diagram 5

Berapakah amplitud dan panjang gelombang bunyi itu?
What is the amplitude and the wavelength of the sound?

	Amplitud, A (mm) ***Amplitude,* A *(*mm*)***	**Panjang gelombang, λ (cm)** ***Wavelength, λ (*cm*)***
A	3	60
B	3	120
C	6	60
D	6	120

14 Manakah kuantiti fizikal yang akan berubah apabila amplitud gelombang bertambah?
When the amplitude of the wave increases, which physical quantity changes?

A Tempoh berkurang
Period decrease
B Tenaga bertambah
Energy increase
C Laju akan bertambah
Speed increase
D Panjang gelombang bertambah
Wavelength increase

19 Antara yang berikut, yang manakah menunjukkan ciri-ciri imej yang dilihat di bawah kanta pembesar?
Which of the following shows the characteristics of an image seen under a magnifying glass?

A Nyata dan tegak
Real and upright
B Nyata dan songsang
Real and inverted
C Maya dan tegak
Virtual and upright
D Maya dan songsang
Virtual and inverted

20 Suatu objek berada 25 cm di hadapan sebuah kanta cembung dengan panjang fokus 10 cm. Berapakah jarak imej yang terhasil?
An object is 25 cm *in front of convex lens with a focal length of* 10 *cm. What is the distance of the image formed?*

A 16.7 cm

B 20.0 cm

C 25.0 cm

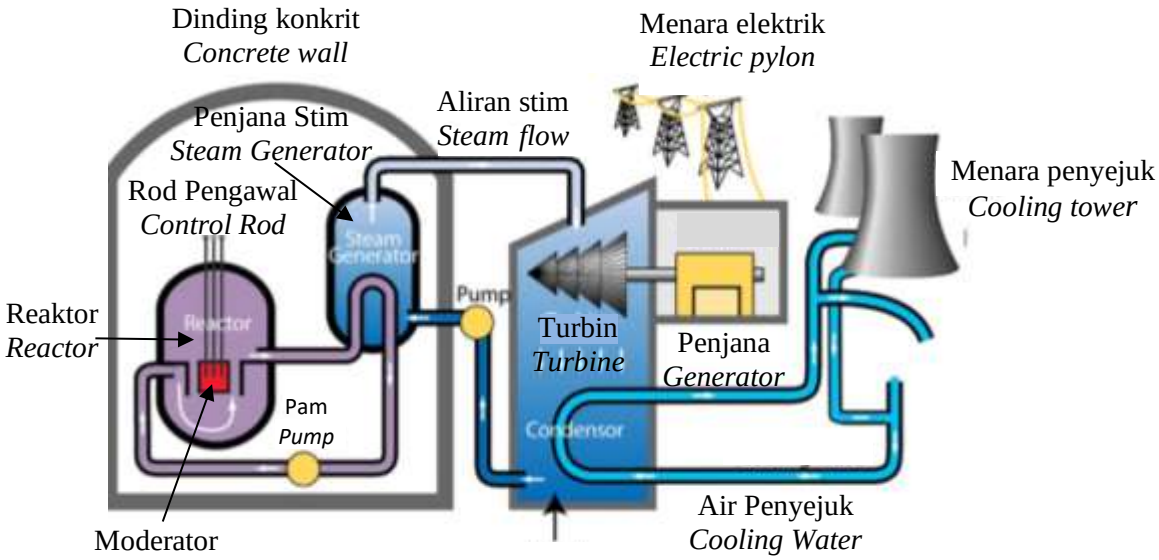
D 35.0 cm

Bahagian A
Section A

[60 *markah* / *marks*]

Jawab **semua** soalan dalam bahagian ini.
*Answer **all** the questions in this section.*

1. Rajah 1.1 menunjukkan sebuah stesen jana kuasa nuklear yang digunakan untuk penjanaan tenaga elektrik.
Diagram 1.1 *shows a nuclear power station that is used to generate electricity.*



Rajah 1.1
Diagram 1.1

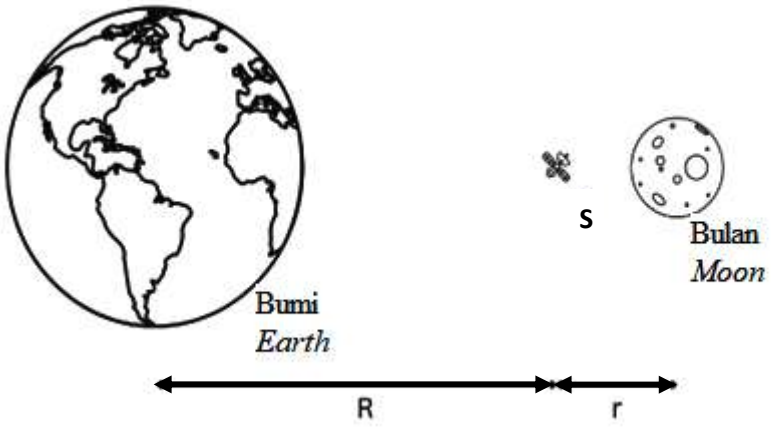
(a) Tandakan (√) pada pernyataan yang **betul.**
Mark with (√) for a **correct** *statement.*

Jenis tindak balas yang berlaku dalam reaktor nuklear ialah
Type of reaction that take place in nuclear reactor is

☐	tindak balas pembelahan nukleus *nucleus fission reaction*
☐	tindak balas pelakuran nukleus *nucleus fusion reaction*

[1 *markah*/*mark*]

2. Rajah 2 menunjukkan satu objek S berjisim m berada pada satu titik yang berjarak R dari pusat Bumi dan r dari pusat Bulan.
Diagram 2 *shows an object* S *of mass m situated at a point which is at a distance* R *from the centre of the Earth and r from the centre of the Moon.*



Rajah 2
Diagram 2

Jisim Bumi ialah M_E dan jisim Bulan ialah M_M. Pemalar kegravitian ialah G.
The masses of the Earth and Moon are M_E *and* M_M *respectively. The gravitational constant is* G.

(a) Dengan menggunakan simbol yang diberi, tuliskan satu ungkapan bagi
Using the symbols given, write down an expression for

(i) daya tarikan graviti antara objek S dengan Bumi.
the gravitational attraction between object S *and the Earth.*

[1 *markah*/*mark*]

(ii) daya tarikan graviti antara objek S dengan Bulan.
the gravitational attraction between object S *and the Moon.*

[1 *markah*/*mark*]

(c) Berdasarkan Rajah 4.2, tentukan
Based on Diagram 4.2, *determine*

(i) daya gerak elektrik bagi sel-sel kering. Tunjukkan pada graf bagaimana anda menentukan daya gerak elektrik bagi sel-sel kering.
the electromotive force of dry cells. Show on the graph how you determine the electromotive force of dry cells.

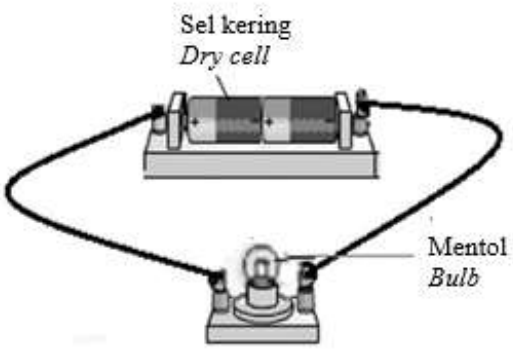
……...

[2 *markah*/*marks*]

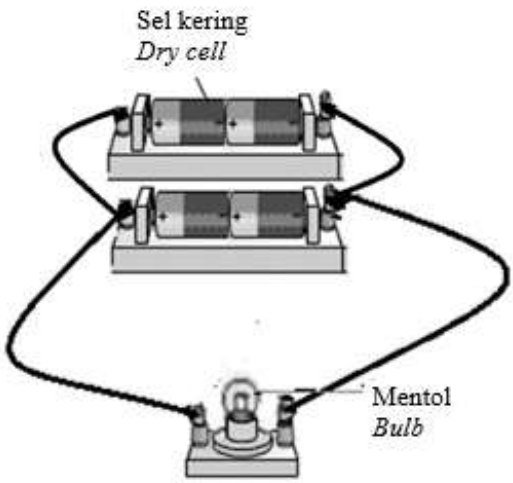
(ii) rintangan dalam bagi sel-sel kering.
the internal resistance of dry cells.

[2 *markah*/*marks*]

(d) Rajah 4.3(a) menunjukkan litar dengan susunan sel kering secara bersiri dan Rajah 4.3(b) menunjukkan litar dengan susunan sel kering secara selari.
Diagram 4.3(a) *shows a circuit for the dry cells arrange in series and Diagram* 4.3(b) *shows the circuit with arrangement of dry cells in parallel.*



Rajah 4.3(a)
Diagram 4.3(a)



Rajah 4.3(b)
Diagram 4.3(b)

Nyatakan mentol dalam litar manakah yang menyala dengan lebih cerah. Terangkan jawapan anda.
State in which circuit the bulb lights up brighter. Explain your answer.

……..

……..

……..

……..

[3 *markah*/*marks*]

Total A4

<table>
<tr><th colspan="4">BAHAGIAN A</th></tr>
<tr><th colspan="2">NO SOALAN</th><th>SKEMA JAWAPAN</th><th>MARKAH</th></tr>
<tr><td rowspan="3">1.</td><td>(a)</td><td><table><tr><td>tindak balas pembelahan nukleus
nucleus fission reaction</td><td>√</td></tr><tr><td>tindak balas pelakuran nukleus
nucleus fusion reaction</td><td></td></tr></table></td><td>1</td></tr>
<tr><td>(b)</td><td>• Rod kawalan / Control rod
• Moderator / Moderator</td><td>1
1</td></tr>
<tr><td>(c)</td><td>Tenaga haba / Heat energy</td><td>1</td></tr>
<tr><td colspan="3">JUMLAH</td><td>4</td></tr>
<tr><td rowspan="2">2.</td><td>(a)</td><td>(i) $F = \frac{GM_E m}{R^2}$

(ii) $F = \frac{GM_M m}{r^2}$</td><td>1

1</td></tr>
<tr><td>(b)</td><td>$\frac{GM_E m}{R^2} = \frac{GM_M m}{r^2}$

$r^2 = \frac{M_M R^2}{M_E}$
$= (M_M)(3.5 \times 10^8\ m)^2/81M_M$

$r = \sqrt{1.51\ x\ 10^{15}}$ m

r = 38858718.46 m</td><td>1

1

1</td></tr>
<tr><td colspan="3">JUMLAH</td><td>5</td></tr>
<tr><td rowspan="4">3.</td><td>(a)</td><td>Silikon / Germanium / Galium arsenida
Silicone / Germanium / Galium arsenide</td><td>1</td></tr>
<tr><td>(b)</td><td>• Tiada aliran arus dalam litar P / No current flows in circuit P //
Arus mengalir dalam litar Q / Current flows in circuit Q.
• Diod di litar P secara pincang songsang /
Diode in circuit P is connected in reverse biased //
Diod di litar Q secara pincang depan /
Diode in circuit Q is connected in forward biased</td><td>1

1</td></tr>
<tr><td>(c)</td><td>Membenarkan arus mengalir pada satu arah sahaja.
To allow current to flow in one direction only.</td><td>1</td></tr>
<tr><td>(d)</td><td>• Litar tersebut mempunyai empat diod disambung untuk membentuk rektifier tetimbang
The circuit has four diodes connected to form a bridge rectifier</td><td>1</td></tr>
</table>

Suka sampel ini?

Kertas Trial SPM

Fizik (25+ set)

- Kertas trial SPM dari banyak negeri untuk subjek yang dipilih
- Skema jawapan / cadangan jawapan
- Set Penuh: semua 17 subjek dan jadual ulangkaji A+

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